Abstract
Peran TGF-β1, EGF, FGF-1dan MMP-12 Pada Proses Remodeling Saluran Napas Hewan Coba Tikus Wistar Jantan Akibat Pajanan Asap Rokok
Muzaijadah Retno Arimbi

Latar Belakang: Remodeling saluran napas meliputi: hiperplasi sel epitel, hiperplasia sel goblet, fibrosis subepitel, hiperplasia sel otot polos, penebalan dinding pembuluh darah dan emphisema alveolar. Remodeling melibatkan berbagai *growth factor* seperti TGF-β1,EGF, dan FGF-1, serta enzim MMP-12. Dengan mengetahui subtansi yang berperan dalam proses remodeling, maka remodeling bersifat ireversibel (fibrotik sel epitel, penebalan endotel pembuluh darah dan emphisema alveolar) dapat dikendalikan.

Bahan dan Metode: Penelitian menggunakan sampel hewan coba tikus jenis *Rattus norvegicus* strain *Wistar* yang dipajan asap rokok secara serial selama 3 bulan. Jenis penelitian *true experimental*, selanjutnya diteliti dengan metode Imunohistokimia terhadap skor TGF-β1,EGF, dan FGF-1 pada sampel jaringan saluran napas, pemeriksaan enzim *metaloproteinase* MMP-12 pada sampel BAL saluran napas. Penelitian ini menggunakan rancangan *pretest-posttest control group design time series.*

Hasil: Ekspresi TGF-β1, FGF-1, dan EGF pada dinding alveoli yang menebal meningkat bermakna dibanding kelompok kontrol, ekspresi FGF-1 pada endotel pembuluh darah alveoli yang menebal meningkat bermakna dibanding kelompok kontrol, ekspresi TGF-β1 dan EGF pada sel epitel yang hiperplasi beda bermakna dibanding kelompok kontrol. Sedangkan ekspresi TGF-β1 pada sel otot polos yang hiperplasi , ekspresi EGF pada sel goblet yang hiperplasi, serta konsentrasi MMP-12 pada emphisema alveoli tidak dijumpai peningatan bermakna terhadap kelompok kontrol maupun terhadap kelompok pajanan lain.

Kesimpulan: TGF-β1, EGF, dan FGF-1 berperan dalam penebalan dinding alveoli, FGF-1 berperan dalam penebalan endotel arteriol interalveolaris, sedangkan TGF-β1 dan EGF berperan pada hiperplasi sel epitel.

Kata kunci: TGF-β1, FGF-1,EGF, MMP-12, hiperplasi, alveoli, arteriol, otot polos, goblet

Abstract

The Role of TGF-β1, EGF, FGF-1 and MMP-12 on The Remodeling Process Respiratory Tract Male Wistar Rats Animals Try Due to Tobacco Smoke Exposure
Muzaijadah Retno Arimbi

Background: Remodeling of the airways include: epithelial cell hyperplasia, Goblet cell hyperplasia, subepithelial fibrosis, smooth muscle cells hyperplasia, thickening of the blood vessel wall and emphisema alveolar. Remodeling involves various growth factors such as TGF-β1,EGF, FGF-1 and MMP-12. By knowing the marker that play a role in the process of remodeling, the remodeling that is irreversible (fibrotic thickening of epithelial cells,vascular endothelium and emphisema alveolar) can be controlled.

Materials and Methods: This study used a sample of the type rats Rattus norvegicus Wistar strain dipajan serial cigarette smoke for 3 months. This type of research on a true experimental because test animals are given exposure to cigarette smoke, then examined by Immunohistochemistry method to score the expression of TGF-β1,EGF, and FGF-1 in the airway tissue samples and MMP-12 from BAL of airway tract. This research use pretest-posttest control group design time series

Result: expression of TGF-β1, FGF-1, and EGF in the thickened walls of the alveoli increased significantly compared to the control group , the expression of FGF -1 in the thickened alveoli vascular endothelial increased significantly compared to the control group , the expression of TGF-β1 and EGF in the epithelial cells hyperplasia increased significantly compared to the control group. However, TGF-β1 expression in smooth muscle cell hyperplasia, the expression of EGF on the epithelial cells hyperplasia and goblet cells hyperplasia, so concentration of MMP-12 in BAL of airway tract did not significantly increase the control group and the other exposure groups .

Conclusion : TGF-β1, EGF and FGF - 1 plays a role in remodeling the form of fibrotic (thickening of the walls of the alveoli), FGF - 1 plays a role in remodeling the form of a thickening of the vascular interalveolaris septum, while TGF-β1and EGF plays a role in epithelial cell hyperplasia .

Keywords: TGF-β1, FGF-1 , EGF, MMP-12, hiperplasi, alveoli wall, arteriolar endothelial, smooth muscle, goblet